

FIG. 2

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| COLUMN | DESCRIPTION |
|---------------------|--|
| ID (PK) | Uniquely identifies the package. |
| PACKAGE_START_TIME | The time the first contained promotion is active. This column is updated each time a promotion is added to the package, using the START_TIME from the earliest promotion. |
| PACKAGE_EXPIRE_TIME | The time the first contained promotion expires. This value is computed by adding the last promotion's START_TIME to its DURATION. |
| INFO_TX_TIME | Scheduled time for distributing the transmission schedule. Computed by the scheduler by subtracting from DATA_TX_TIME the INFO_TX_LEADTIME from the associated transmission group. |
| DATA_TX_TIME | Scheduled start time for the multicast. Computed by the scheduler by subtracting from the earliest promotion activation time the DATA_TX_LEADTIME value from the associated transmission group. |
| DATA_TX_DURATION | Total time (in msec) of the transmission. Computed using an algorithm that uses the total number of bytes to be sent, along with the transmission group's DATA_TX_RATE and DATA_TX_CYCLE_COUNT values as input parameters. |

TO
FIG. 3B

FIG. 3A

FIG. 3A

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FROM
FIG. 3A

| | |
|-----------------------|---|
| DATA_TX_ADDRESS | IP multicast address to be used to send the package. The scheduler uses an internal API call which retrieves this value using a round-robin scheme layered over configured address information. |
| DATA_TX_PORT | UDP port number to be used to send the package. The scheduler uses a round-robin scheme layered over configured port information. |
| DATA_TX_RATE | |
| TRANSMISSION_GROUP_ID | Identifies the transmission group to receive the package. The scheduler determines this value by mapping promotion group identifiers into transmission group identifiers when a promotion is scheduled. All of the promotions within a single package share a command transmission group identifier. When a promotion is associated with more than one transmission group, a separate package is created in the system for each group. |

TO
FIG. 3C

FIG. 3B

FROM
FIG. 3B

| | |
|--------------------|---|
| SCHEDULE_TX_SENT | Character encoded Boolean set to TRUE after the transmission schedule has been sent to the devices. Note: once the device has been notified of the schedule the package cannot be altered by the normal process. has been sent means that schedule needs to be regenerated and transmitted to the devices. |
| SCHEDULE_TX_RESULT | Result code containing the result of the schedule transmission. |
| DATA_TX_SENT | Character encoded Boolean set to TRUE after the multicast has been successfully accomplished. |
| DATA_TX_RESULT | Result code containing the result of the data transmission. |
| TIME_CREATED | Time the entry was added to the table. |
| TIME_MODIFIED | Last time the record was updated. |

FIG. 3C

| Multicast Remote Moniker | |
|--------------------------|---|
| Parameter | Meaning |
| ObjectGUID | This identifies the data that follows as a multicast remote moniker, version 1.0 |
| ModuleID | The bulk server correlates its binaries using the module ID. The module ID is used to choose the binary to send or receive. |
| Start time | Time that the multicast transmission of the data begins. |
| Duration | Length of time that the multicast runs. |
| Address | IP multicast address. |
| Port | Port # for multicast. |

FIG. 4A

| HG_BULKMGR_SCHEDULE_MULTICAST | |
|----------------------------------|---|
| Parameter | Meaning |
| HG_PROP_REQUEST_TYPE | HG_BULKMGR_SCHEDULE_MULTICAST |
| HG_PROP_REQUEST_ID | Used to correlate request with responses |
| HG_PROP_QUEUE_NAME | HG_BULKSERVER_QUEUE_NAME |
| HG_PROP_RESPONSE_QUEUE | The responses are sent to this queue. |
| HG_PROP_SENDER_ID | The responses are sent to this machine. |
| HG_PROP_BULKMGR_IP_ADRESSSS | Internet address for multicast. |
| HG_PROP_BULKMGR_PORT | Port # used to send multicast. |
| HG_PROP_BULKMGR_NETWORK_ID | The network to multicast over. This defaults to the value in the property collection. |
| HG_PROP_BULKMGR_PACKET_FREQUENCY | # of ticks per packet transmission. |
| HG_PROP_BULKMGR_START_TIME | Time to start the transmission. |
| HG_PROP_BULKMGR_DURATION | Length of the transmission |
| HG_Module ID1 | Unique identifier for first promotion |
| HG_Module ID2 | Unique identifier for second promotion. |
| ... | ... |
| HG_Module IDn | Unique identifier for n'th promotion. |

FIG. 4B

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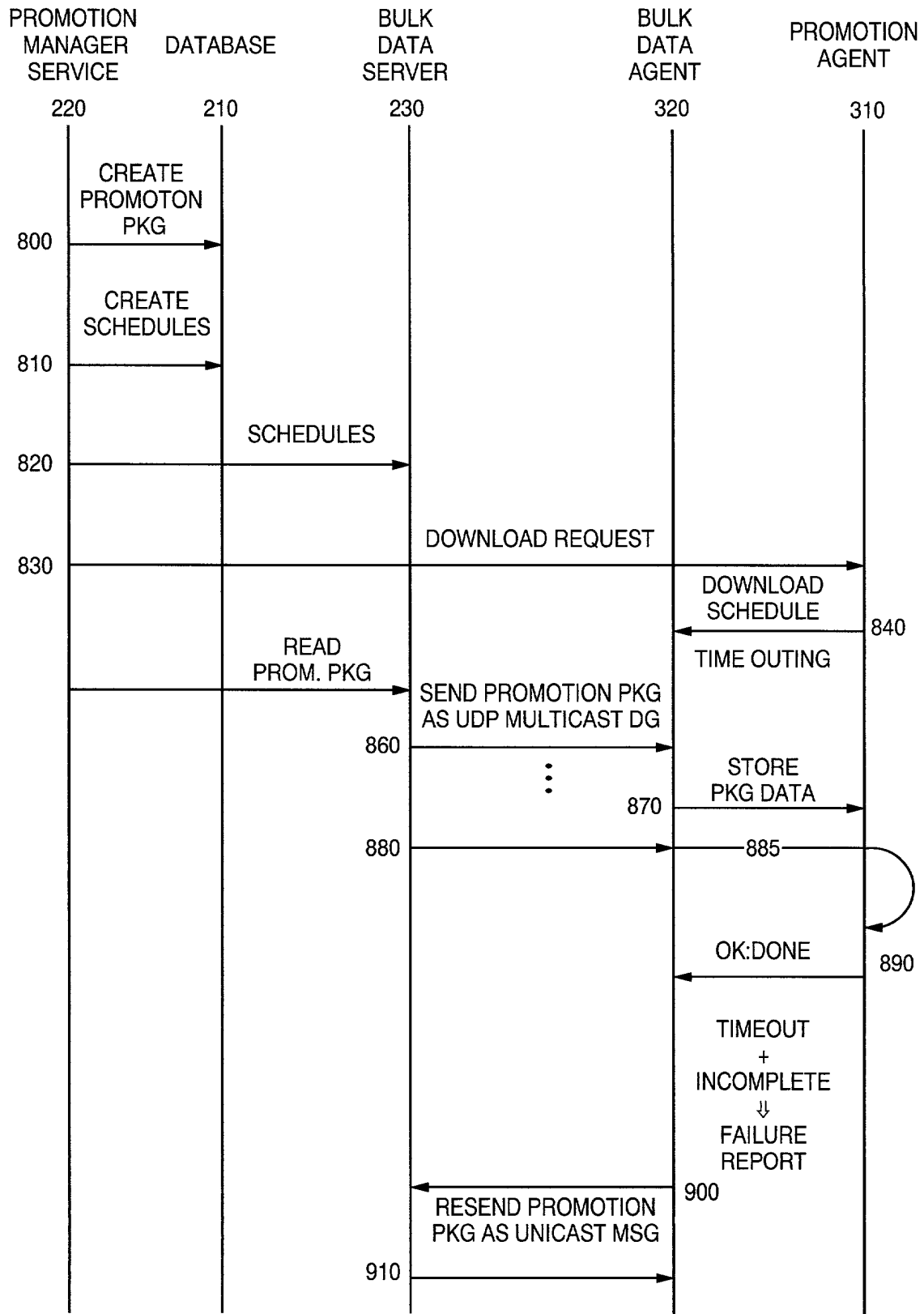


FIG. 5